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WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2002GA5B

Title: Toxic Metalloid (As, Se, Sb) Enrichment from Coal-Fired Power Plants in the Chattahoochee-Apalachicola (ACF) & Etowah-Coosa (ACT) Rivers

Project Type: Research

Focus Categories: Water Quality, Toxic Substances, Geochemical Processes

Keywords: Coal-Fired Power Plants, Trace Elements, Toxic Substances, Water Quality, Water Chemistry, Rivers, Heavy Metals, Geochemistry, Contaminant Transport, Arsenic, Selenium, Antimony, Tri-State Water Compacts, EPA-TRI (Toxic Release Inventory)

Start Date: 03/01/2002

End Date: 02/28/2003

Federal Funds Requested: $18,000

Non-Federal Matching Funds Requested: $36,000

Congressional District:

Principal Investigator:
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Abstract

We propose to evaluate river-borne contamination of the toxic trace metalloids Arsenic (As), Selenium (Se) and Antimony (Sb) in rivers receiving ash pond effluents from coal-fired power plants (CFPP's) in Georgia and Alabama: the Chattahoochee-Apalachicola River (McDonough, Yates, Wansley CFPP) and Etowah-Coosa River (Bowen, Hammond, Gadsden and Gaston CFPP). Our preliminary analyses in the Chattahoochee River from its clean reaches above Atlanta (above all CFPP) to below two CFPP sited below Atlanta (Yates and Wansley) have confirmed our previous predictions that these CFPP's are responsible for large and unaccounted for aquatic releases of As, Se and Sb to adjacent rivers via drainage from the ash-retention ponds.

This proposal is for a masters-level graduate research project to measure As, Se and Sb concentrations and speciation along rivers receiving ash pond effluents, including those where power companies have converted to dry ash disposal to reduce aquatic As and Se release (Bowen). Suspended sediment and seston plus benthic algae determinations along rivers above and below power plants will help elucidate solid phase and biological partitioning at elevated levels encountered in contaminated rivers, and the importance for suspended materials in transporting and bioaccumulating contaminants downstream. Mass balance models based on the above data and analyses of fired coals and ash pond effluents will help power plant operators satisfy TRI requirements for reporting metalloid releases to the environment, and provide basic information and predictive models for environmental planners and regulators to deal with toxic metal releases.